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Attorney Docket No. TI-62961

REMARKS

Claims 1-3, 5-21, 24-30, 32-54, 56-64, and 66-71 are pending. With this amendment, claims 30, 48, 49, and 57 are amended to remove informalities therein.

The indication of the allowable subject matter in claims 1-3, 5-21 and 24-29 is appreciated. To advance the prosecution of this patent application after the final Office Action, a Request for Continued Examination is submitted herewith.

Rejection of independent claim 30

Independent claim 30 was rejected under 102(b) over Outka (US 20020179569). Claim 30 is amended herein to expressly recite, among other features that the etchant recipe comprises a spontaneous vapor phase etchant comprising an interhalogen or noble gas halide. In comparison, Outka is directed to a method of plasma etching. It is respectfully submitted that Outka nowhere teaches or suggests the etchant recipe that comprises a spontaneous vapor phase etchant comprising an interhalogen or noble gas halide. It is noted that even prior to this amendment to claim 30, the Outka reference did not teach or suggest the features of claim 30 including the spontaneous vapor phase etchant (as noted above Outka is directed to plasma etching – not spontaneous vapor phase etching).

In the Office Action, the Examiner rejected claim 30 by taking the position that Outka discloses the claimed invention due to the disclosure of the etchant BCl_3 for performing plasma etching. It is respectfully submitted that BCl_3 is a plasma etchant – not a spontaneous vapor phase etchant. Nor is BCl_3 an interhalogen (it does not comprise two different halogens) or a noble gas halide (it does not comprise a noble gas) as presently required by claim 30.

Because Outka fails in teaching or suggesting all features of claim 30, claim 30, as well as claims 31-52 depending from claim 30, is patentable over Outka. Reconsideration and withdrawal of the rejection are respectfully requested.

Rejection of independent claim 53

With respect to the Examiner's rejection of claim 53 over Lebouitz (US 20020033229) in view of Outka, this rejection is respectfully traversed.

Claim 53 expressly recites, among other features, the step of providing an etchant recipe that is a spontaneous vapor phase etchant to the etch chamber over time, wherein an amount of the etchant is varied when a change of a measured parameter is beyond a predetermined value during the etching, and wherein the amount of the etchant is varied from a first amount to a second amount and wherein both the first and second amounts are not 0. This feature is nowhere disclosed or suggested by Lebouitz and

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Outka, either individually or in combination.

In contrast, Lebouitz discloses, for example, in paragraph [0038] that the precise values for each of those parameters, which include one or more of: xenon difluoride to nitrogen gas ratio, etch time, etch pressure, and number of cycles, is dependent on and will thus vary with the nature of the sample to be etched and may be chosen by one of the skilled in the art. These parameters are potentially variable from sample to sample based on the type of sample but not during the etching process of the same sample (see paragraphs [0039] to [0044]). Lebouitz also discloses determining an endpoint of the etch – if this ending of the etch were determined to be a “variation” of the amount of the etchant, claim 53 as amended makes clear that the first and second amounts are non-zero. Lebouitz, therefore, does not teach or suggest the amount of the etchant being varied when a change of a measured parameter is beyond a predetermined value during the etching (and wherein the amount of the etchant is varied from a first amount to a second amount and wherein both the first and second amounts are not 0), as recited expressly in claim 53.

Outka does not remedy the deficiency of Lebouitz. First, Outka is in the area of plasma etching, which is distinct from spontaneous vapor phase etching as claimed (and as in Lebouitz). As such, there is no motivation to combine Lebouitz and Outka for the purpose of making a prima facie case of obviousness for claim 53. Second, even forced into combination, the combination of Lebouitz and Outka does not teach or suggest all features of claim 53. For example, the combination does not teach or suggest the feature of wherein the amount of the etchant is varied from a first amount to a second amount and wherein both the first and second amounts are not 0 as recited in claim 53.

Because Lebouitz and Outka fail in teaching or suggesting all features of claim 53 individually or in combination, claim 53, as well as claims 54-62 depending from claim 53, is patentable over Lebouitz and Outka. Reconsideration and withdrawal of the rejection are respectfully requested.

Rejection of independent claim 63

Independent claim 63 was rejected in the Office Action under 103(a) as being obvious over Lebouitz in view of Winningham (US 6,518,194). This rejection is respectfully traversed.

Claim 63 expressly recites, among other features, the step of etching the second microstructure in the second etching process using the etchant recipe based on the collected data of the parameter in the first etching process. Lebouitz does not disclose or suggest this feature, as indicated by the Examiner. The Examiner states that the deficiency in Tai is remedied by Winningham. The undersigned respectfully submits that there is no motivation to combine Lebouitz and Winningham. Lebouitz is related to gas phase silicon etching with XeF_2 , while Winningham is related to etching Cr coated bionanomasks applied directly to a silicon substrate using H_2 and SF_6 as etchant – two completely different processes and

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bionanomasks applied directly to a silicon substrate using H_2 and SE_6 as etchant — two completely different processes and products.

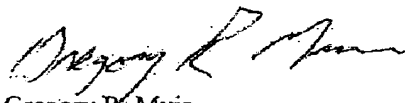
Even forced to combine the two references, Winningham does not remedy the deficiency of Lebouitz. More particularly, the combination of Lebouitz and Winningham does not teach or suggest the step of determining a variation profile of the parameter in the first etch process, as expressly recited in claim 63.

Because Lebouitz and Winningham, either individually or in combination, do not disclose or suggest all features of claim 63, claim 63, as well as claims 64 and 66-71 that are dependent from claim 63, is patentable over Lebouitz and Winningham. Reconsideration and withdrawal of the rejection are respectfully requested.

It is believed that this application is in condition for allowance. Favorable consideration and prompt allowance are respectfully requested. In the event any fees are required in connection with this paper, please charge our Deposit Account No. 20-0668.

Respectfully submitted,

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